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MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

For "on-off" control applications involving long periods of operation under cutoff conditions

GENERAL DATA

Electrical:

Heater, Pure Tungsten, for Unipotential Cathodes:

Heater arrangement	*Series*	*Parallel*	
Voltage.	12.6 ± 5%	6.3 ± 5%	ac or dc volts
Current.	0.15	0.3	amp

Direct Interelectrode Capacitances:°

	Unit No.1	*Unit No.2*	
Grid to plate.	2.22	2.22	μμf
Grid to cathode and heater .	2.90	2.90	μμf
Plate to cathode and heater .	0.54	0.46	μμf
Heater to cathode.	3.25	3.25	μμf ←
Plate of unit No.1 to plate of unit No.2	0.56		μμf
Grid of unit No.1 to grid of unit No.2.	0.06 max.		μμf

Characteristics, Class A₁ Amplifier (Each Unit):

Plate-Supply Voltage	100	volts
Cathode Resistor	470	ohms
Amplification Factor	27	
Plate Resistance (Approx.)	7500	ohms
Transconductance	3600	μmhos
Plate Current.	4.6	ma
Grid Voltage (Approx.) for plate voltage of 150 volts and plate current of 100 μamp .	-8	volts ←

Mechanical:

Mounting Position. . . . . Vertical, base up or down, or Horizontal with pins 1 and 5 in vertical plane ←

Maximum Overall Length . . . . 2-3/16"

Maximum Seated Length. . . . . 1-5/16"

Length, Base Seat to Bulb Top (Excluding tip) . 1-9/16" ± 3/32"

Maximum Diameter . . . . 7/8"

Dimensional Outline. . . . . *See General Section*

Bulb T-6-1/2

Base . . . . Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW 9A

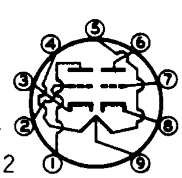
Pin 1 - Plate of Unit No.2

Pin 2 - Grid Unit No.2

Pin 3 - Cathode of Unit No.2

Pins 4 & 9 - Heater of Unit No.2

Pins 5 & 9 - Heater of Unit No.1



Pin 6 - Plate of Unit No.1

Pin 7 - Grid of Unit No.1

Pin 8 - Cathode of Unit No.1

Pin 9 - Heater Mid-Tap

° Without external shield.

← Indicates a change.

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FREQUENCY DIVIDER IN COMPUTER SERVICE and "ON-OFF" CONTROL SERVICE

Values are for Each Unit

Maximum Ratings, *Absolute Values:*

PLATE VOLTAGE	200 max.	volts
GRID VOLTAGE:		
Negative bias value	100 max.	volts
→ Positive bias value	1 max.	volt
→ DC POSITIVE GRID CURRENT	2 max.	ma
→ DC CATHODE CURRENT	16 max.	ma
PLATE DISSIPATION	1 max.	watt
→ PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180▲ max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	120 max.	°C

Maximum Circuit Values:

Grid-Circuit Resistance:		
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

→ CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	*Min.*	*Max.*	
Heater Current	1	0.138	0.162	amp
Plate Current (Each unit)	1,2	4.8	5.5	ma
Plate Current (Each unit)	1,3	3.6	5.6	ma
Plate Current (Each unit)	1,2,4	-	100	µamp
Transconductance	1,2,3	2700	4500	µmhos
Reverse Grid Current (Units in parallel)	1,5	-	1	µamp
Leakage Resistance (Each unit):				
Between grid and all other electrodes	1,6	100	-	megohms
Between plate and all other electrodes	1,7	100	-	megohms
Heater-Cathode Leakage Current:				
Heater negative with respect to cathode	1,8	-	20	µamp
Heater positive with respect to cathode	1,8	-	20	µamp
Difference in Grid Voltage Between Units	1,2,9	-	1	volt
Contact Potential	1,10	-	1	volt
Amplification Factor (Each unit)	1,2	23	31	

Note 1: With 12.6 volts ac or dc on heater (series arrangement).

▲ The dc component must not exceed 90 volts.

→ Indicates a change.

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Note 2: With plate-supply volts = 150, plate-circuit resistance (ohms) = 20,000, and grid-circuit resistance (ohms) = 47,000. Each unit tested separately. Unit not under test connected to ground.

Note 3: With plate-supply volts = 100, cathode resistor (ohms) = 470, and cathode bypass capacitor of 1000 µf. Each unit tested separately. Unit not under test connected to ground.

Note 4: With grid volts = −10.

Note 5: With plate-supply volts = 150, cathode resistor (ohms) = 470, and grid-circuit resistance (megohm) = 0.5.

Note 6: With grid 100 volts negative with respect to all other electrodes tied together.

Note 7: With plate 300 volts negative with respect to all other electrodes tied together.

Note 8: With 100 volts dc between heater and cathode and units connected in parallel.

Note 9: With grid voltage adjusted for plate current of 100 µamp.

Note 10: With plate volts = 100, grid current (µamp) = 0.1, and grid-circuit resistance (megohm) = 0.1. Each unit tested separately. Unit not under test connected to ground.

SPECIAL RATINGS & PERFORMANCE DATA ←

Heater-Cycling Life Performance:

Cycles of Intermittent Operation. . . . . 2000 min. cycles

For conditions: Series heater arrangement, heater volts = 17, cycled 1 minute on and 4 minutes off, heater positive with respect to cathode by +100 volts dc, plate volts = 0, and grid volts = 0.

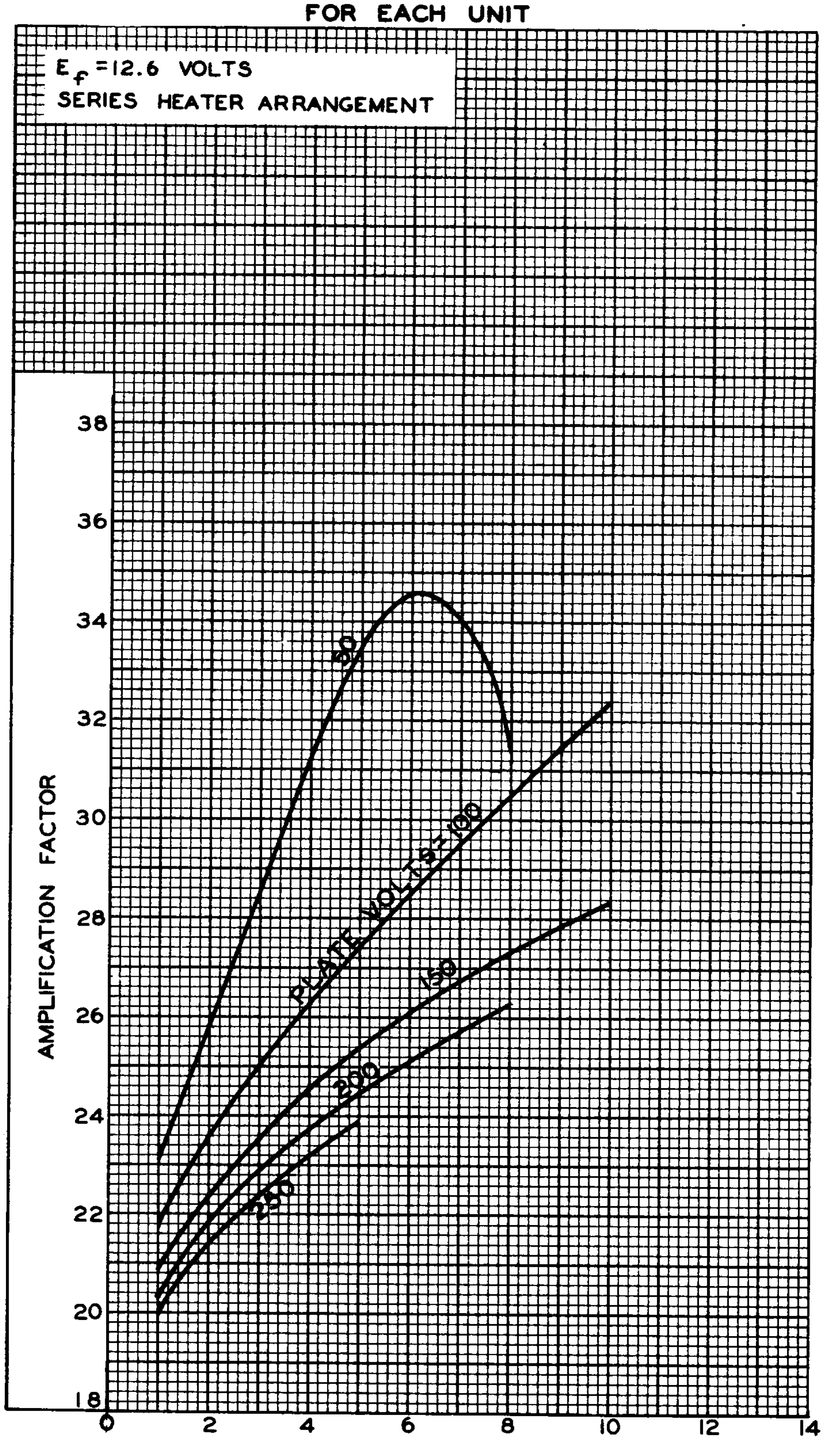
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AVERAGE CHARACTERISTICS
FOR EACH UNIT



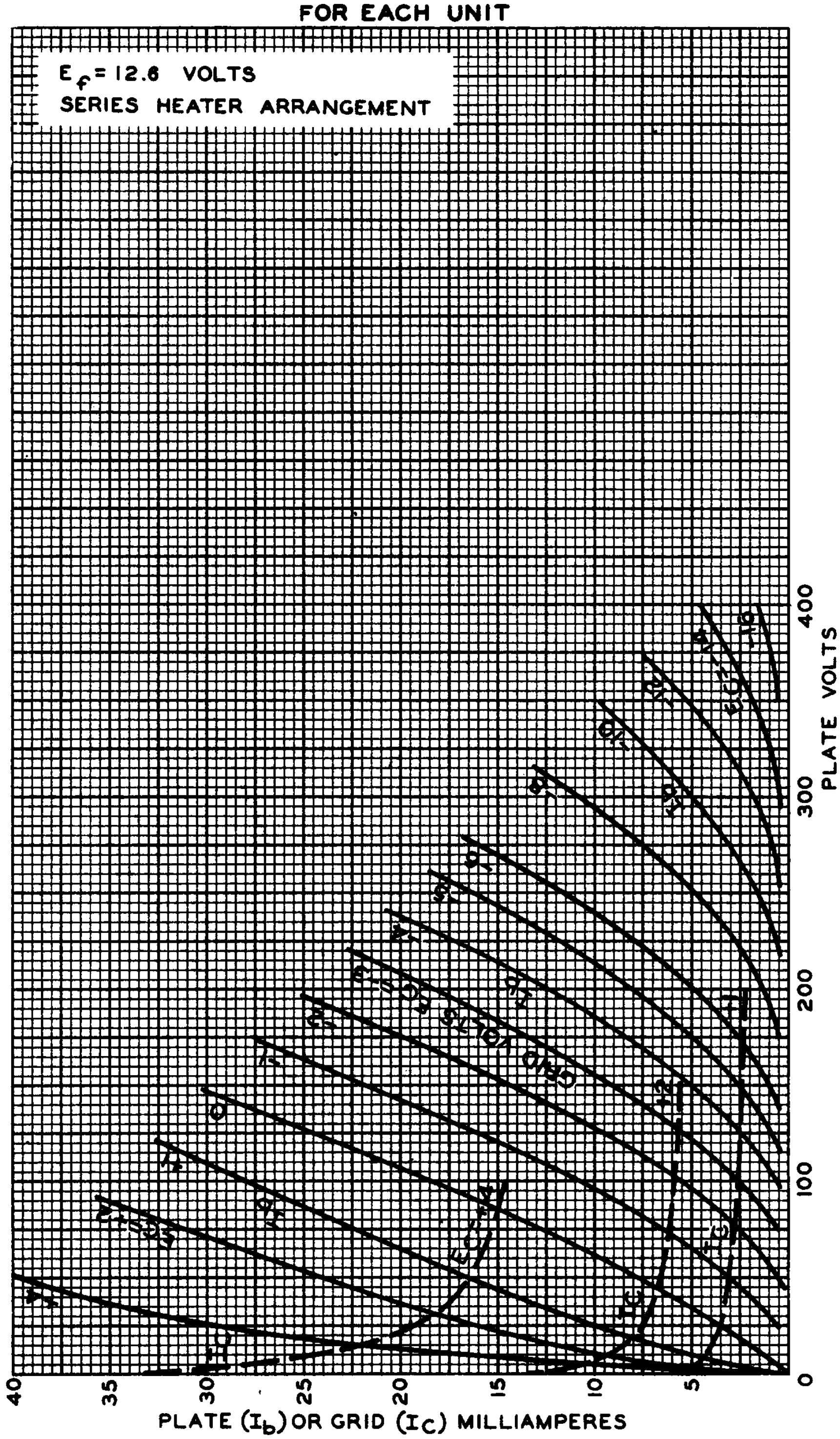
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AVERAGE PLATE CHARACTERISTICS
FOR EACH UNIT

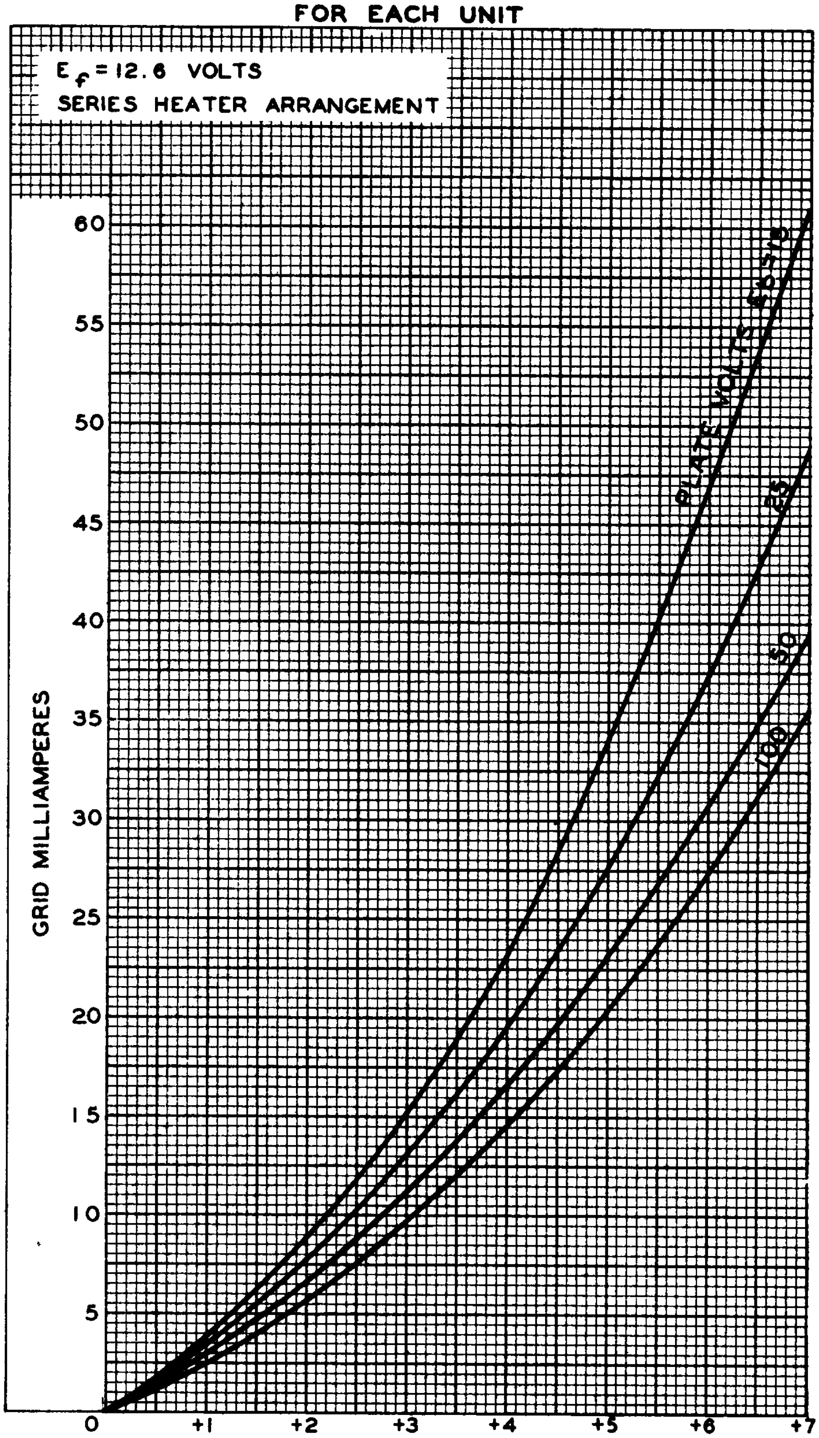


JULY 9, 1952 | TUBE DEPARTMENT | 92CM-7822

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AVERAGE CHARACTERISTICS
FOR EACH UNIT



JAN.6,1953 | TUBE DEPARTMENT | 92CM-7823R1

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